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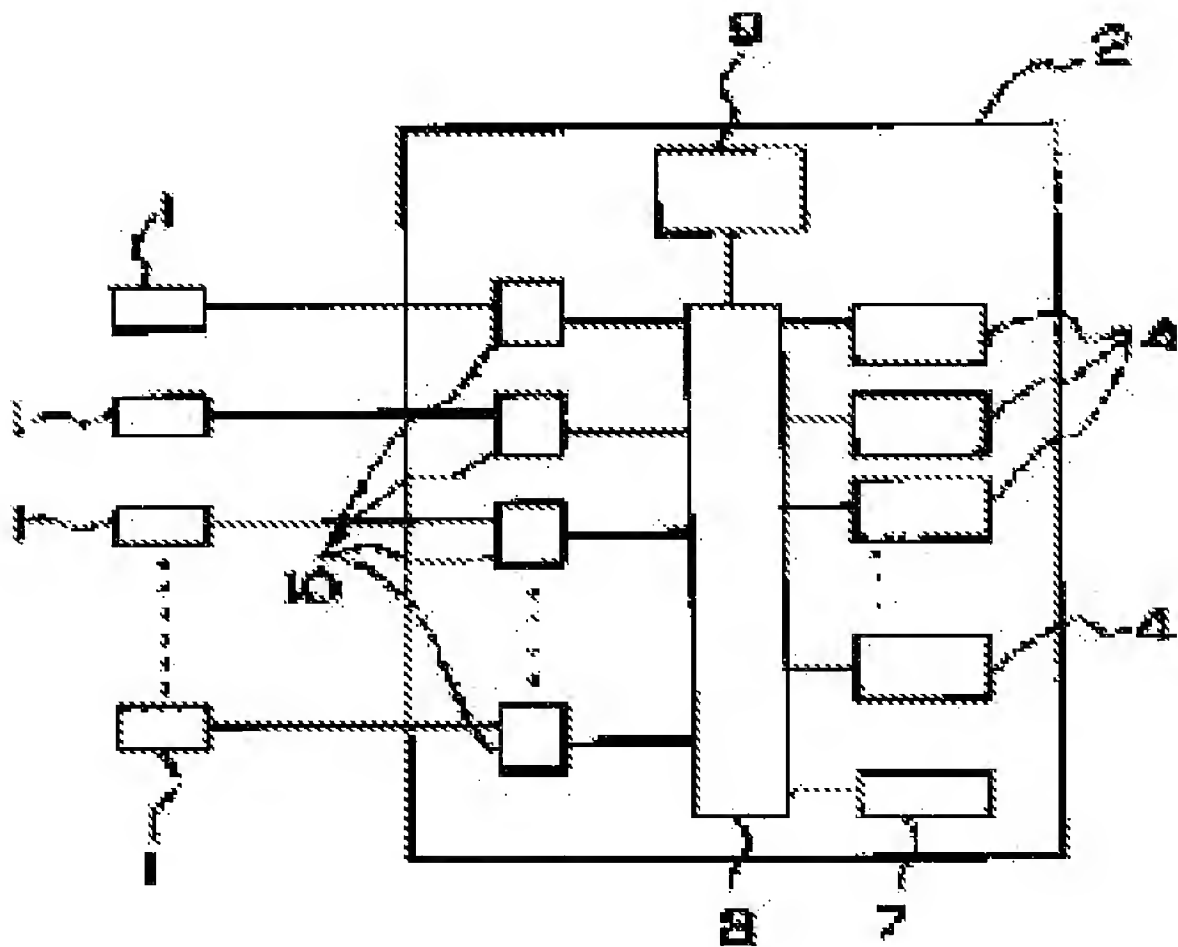
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**Abstract:**

**PROBLEM TO BE SOLVED:** To obtain an electronic apparatus system which eliminates the need for installing an enclosure for every functional printed circuit board and which can be constructed at low cost. **SOLUTION:** This electronic equipment system is constituted of functional printed circuit boards 4, in each of which a function display means used to display a function and an ID setting means used to set an ID function are installed. In addition, the electronic equipment system is constituted of a common enclosure 2, in which the respective functional printed circuit boards 4 can be mounted in an arbitrary order. In addition, the electronic equipment system is constituted of a host computer which controls the functional printed circuit boards 4 mounted inside the common enclosure 1. Thereby, since it is not required to install an enclosure for every functional printed circuit board 4, the electronic equipment system can be constructed to be small and at low cost.



**JPO Machine translation abstract:****(57) Abstract**

**SUBJECT** The housing is provided for every camera control means, matrix switch means, and display means, and there was a problem that the price of electronic equipment systems became high and became uneconomical.

**Means for Solution** The functional printed circuit board 4 in which ID setting means 14 which sets up the function displaying means 12 and ID function which display a function was formed, It is what was constituted from the host computer 6 which controls the functional printed circuit board 4 mounted in each functional printed circuit board 4 in the common case 2 which can be mounted in arbitrary order, and the common case 1, and since it is not necessary to provide a case every functional printed circuit board 4, an electronic equipment system can build small and cheaply.

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**Claim(s)**

**Claim 1** It has a discernment setting-out means to set up an identifying function for two or more functional printed circuit boards to distinguish from a function displaying means and other functional printed circuit boards which display each original function, An electronic equipment system controlling a function of said functional printed circuit board which mounted a functional printed circuit board of these plurality in a common case in arbitrary order, and was mounted in said common case by a control means.

**Claim 2** The electronic equipment system according to claim 1 which provided a through function outputted without letting a functional printed circuit board which broke down a signal inputted into said common housing by failure information from a functional printed circuit board mounted in a common housing pass.

**Claim 3** The electronic equipment system according to claim 1 which provided a through function which it directs that this control means suspends a function of each functional printed circuit board if systems breakdown is directed to a control means, and outputs a signal inputted into a common housing without letting said functional printed circuit board pass.

**Claim 4** Housing structure of an electronic equipment system characterized by comprising the following.

A common housing which can be mounted in order with two or more arbitrary functional printed circuit boards.

A judging means which judges a function and an identifying function of said functional printed circuit board by a function displaying means and a discernment setting-out means of a functional printed circuit board which were mounted in said common housing.

**Claim 5** Functional printed board structure of an electronic equipment system characterized by comprising the following.

A functional printed circuit board which has a different function.

A discernment setting-out means to set up an identifying function of a function displaying means which is provided in these functional printed circuit board, respectively, and displays a function of said functional printed circuit board, and said functional printed circuit board.

**Claim 6** Functional printed board structure of the electronic equipment system according to claim 5 which constituted a function displaying means from a functional display IC and several resistance which differs in a value.

**Claim 7** Functional printed board structure of the electronic equipment system according to claim 5 which constituted a discernment setting-out means from a DIP switch.

**Claim 8** Functional printed board structure of the electronic equipment system according to claim 5 which provided a conductive grasping part in an end of a functional printed circuit board.

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**Detailed Description of the Invention****0001**

**Field of the Invention** This invention relates to the functional printed board structure mounted in the housing structure used for electronic equipment systems, such as a surveillance camera system, and this electronic equipment system, and this housing structure.

**0002**

**Description of the Prior Art** Drawing 6 shows the conventional surveillance camera system, and Two or more set **of surveillance cameras** a, The camera control means b, the matrix switch means c, and display means d, The series connection of two or more sets of the monitors e is carried out, and the camera control means b, the matrix switch means c, and display means d are controlled by the host computer f as follows.

**0003** Namely, if the monitor images picturized by two or more set **of surveillance cameras** a are inputted into the camera control means b and the camera number beforehand given to surveillance camera a from the final controlling element g connected to the host computer f is inputted, The host computer e switches the matrix switch means c so that the picture of surveillance camera a according to the inputted camera number may be sent to display means d.

**0004** The picture which surveillance camera a of the camera number inputted by this picturized is sent to display means d, it is constituted so that it may be displayed on the monitor e connected to display means d, and the picture which two or more surveillance camera a picturized simultaneously can also be displayed now on the monitor e.

**0005** In the above conventional surveillance camera systems. The camera control means b, the matrix switch means c, display means d, etc., It is constituted by two or more printed circuit board h, respectively, and as shown in drawing 7, it is mounted in the housing i provided in every each camera control means b, matrix switch means c, and display means d.

**0006**

**Problem(s) to be Solved by the Invention** In the above-mentioned conventional electronic equipment system, it had become the structure which equipped with the housing h every camera control means b to constitute this electronic equipment system, matrix switch means c, and display means d.

**0007** However, since there is much number of sheets of printed circuit board h which constitutes each camera control means b, the matrix switch means c, and display means d when an electronic equipment system is large-sized, Although there is a merit which mounts printed circuit board h in every each camera control means b, matrix switch means c, and display means d, Since the number of sheets of printed circuit board h which constitutes each camera control means b, the matrix switch means c, and display means d also decreases when an electronic equipment system is small, In some which form the housing i like the above-mentioned conventional system in every each camera control means b, matrix switch means c, and display means d, there was a problem that the price of electronic equipment systems became high and became uneconomical.

**0008** This invention is made paying attention to the above-mentioned problem, and there is a place made into the 1st purpose in providing the electronic equipment system which it becomes unnecessary to provide a housing for every functional printed circuit board, and can be built cheaply.

**0009** The mounting work of a functional printed circuit board can carry out easily in a short time, and there is a place made into the 2nd purpose of this invention in providing the housing structure of an electronic equipment system without a fear of mistaking a mounting position.

**0010** The place made into the 3rd purpose of this invention has a function and an identifying function in providing the functional printed board structure of the electronic equipment system which can be easily set up now for every functional printed circuit board.

**0011**

**Means for Solving the Problem** In order to attain the 1st above-mentioned purpose, an electronic equipment system concerning this invention, It has a discernment setting-out means to set up an identifying function for two or more functional printed circuit boards to distinguish from a function displaying means and other functional printed circuit boards which display each original function, A function of said functional printed circuit board which mounted a functional printed circuit board of these plurality in a common case in arbitrary order, and was mounted in said common case by a control means is controlled.

**0012** In order to attain the 2nd above-mentioned purpose, housing structure of an electronic equipment system of this invention is characterized by comprising the following:  
A common housing which can be mounted in order with two or more arbitrary functional printed circuit boards.

A judging means which judges a function and an identifying function of a functional printed circuit board by a function displaying means and a discernment setting-out means of a functional printed circuit board which were mounted in a common housing.



**0013**In order to attain the 3rd above-mentioned purpose, functional printed board structure of an electronic equipment system of this invention is characterized by comprising the following:  
A functional printed circuit board which has a different function.

A discernment setting-out means to set up an identifying function of a function displaying means which is provided in these functional printed circuit board, respectively, and displays a function of a functional printed circuit board, and a functional printed circuit board.

**0014**Therefore, since it is not necessary to provide a housing for every functional printed circuit board according to the electronic equipment system concerning this invention, an electronic equipment system can build cheaply, and in the case of a small electronic equipment system with few functional printed circuit boards, a miniaturization of the electronic equipment whole system can be attained.

**0015**Even if it mounts two or more functional printed circuit boards in arbitrary order into a common case according to housing structure of an electronic equipment system concerning this invention, in order that a judging means may carry out the discernment judging of a function and an identifying function of each functional printed circuit board automatically, Mounting work of a functional printed circuit board can carry out easily in a short time, and there is also no fear of mistaking a mounting position.

**0016**According to functional printed board structure of an electronic equipment system concerning this invention, a function and an identifying function can set up now easily for every functional printed circuit board.

**0017**

**Embodiment of the Invention**The electronic equipment system concerning the invention of claim 1 two or more functional printed circuit boards, It has a discernment setting-out means to set up the identifying function for distinguishing from the function displaying means and other functional printed circuit boards which display each original function, The function of said functional printed circuit board which mounted the functional printed circuit board of these plurality in the common case in arbitrary order, and was mounted in said common case by the control means is controlled.

**0018**By this composition, since it is not necessary to provide a housing for every functional printed circuit board, an electronic equipment system can build cheaply, and in the case of a small electronic equipment system with few functional printed circuit boards, the miniaturization of the electronic equipment whole system can be attained.

**0019**Since the function and identifying function of each functional printed circuit board which were mounted in the common housing are identified by the function displaying means provided in the functional printed circuit board, and a discernment setting-out means, a functional printed circuit board can be mounted in arbitrary order into a common housing.

**0020**The electronic equipment system concerning the invention of claim 2 provides the through function outputted without letting the functional printed circuit board which broke down the signal inputted into the common housing by the failure information from the functional printed circuit board mounted in the common housing pass in the electronic equipment system according to claim 1.

**0021 that the operation effect of an invention of above-mentioned claim 1 and the same operation effect can be done so by this composition, and** When a functional printed circuit board breaks down, since the signal which was switched to the through function by the failure information from a functional printed circuit board, and was inputted into the common case is outputted without letting a functional printed circuit board pass, an electronic equipment system does not stop it by failure of a functional printed circuit board.

**0022**The electronic equipment system concerning the invention of claim 3, In the electronic equipment system according to claim 1, if systems breakdown is directed to a control means, it will direct that this control means suspends the function of each functional printed circuit board, and it will provide the through function which outputs the signal inputted into the common housing without letting a functional printed circuit board pass.

**0023 that the operation effect of an invention of above-mentioned claim 1 and the same operation effect can be done so by this composition, and** Since the signal inputted into the common case can be outputted without letting a functional printed circuit board pass when stopping an electronic equipment system and changing the control-system procedure of an electronic equipment system, etc., a control-system procedure etc. can be changed without spoiling a monitoring function etc.

**0024**The housing structure of the electronic equipment system concerning the invention of claim 4, It has \*\* which judges the function and identifying function of a functional printed circuit board by the function displaying means and discernment setting-out means of a functional printed circuit board which were mounted in the common housing which can be mounted in order with two or more arbitrary functional printed circuit boards, and the common housing.

**0025**By this composition, even if it mounts two or more functional printed circuit boards in arbitrary order into a common case, since a judging means carries out the discernment judging of the function and identifying function of each functional printed circuit board automatically, the mounting work of a functional printed circuit board can carry out easily in a short time, and there is also no fear of mistaking a mounting position.

**0026**The functional printed board structure of the electronic equipment system concerning the invention of claim 5, It has a discernment setting-out means to set up the identifying function of the function displaying means which is provided in the functional printed circuit board which has a different function, and these functional printed circuit board, respectively, and displays the function of a functional printed circuit board, and a functional printed circuit board.

**0027**By this composition, a function and an identifying function can set up now easily for every functional printed circuit board.

**0028**In the functional printed board structure of the electronic equipment system concerning the invention of claim 5, the functional printed board structure of the electronic equipment system concerning the invention of claim 6 constitutes a function displaying means from a functional display IC and several resistance which differs in a value.

**0029**The operation effect of an invention of above-mentioned claim 5 and the same operation effect not only being done so by this composition but a function displaying means can constitute cheaply.

**0030**The functional printed board structure of the electronic equipment system concerning the invention of claim 7 constitutes a discernment setting-out means with a DIP switch in the functional printed board structure of the electronic equipment system concerning the invention of claim 5.

**0031**The operation effect of an invention of above-mentioned claim 5 and the same operation effect not only being done so by this composition but a discernment setting-out means can constitute cheaply.

**0032**The functional printed board structure of the electronic equipment system concerning the invention of claim 8 provides a conductive grasping part in the end of a functional printed circuit board in the functional printed board structure of the electronic equipment system concerning the invention of claim 5.

**0033**Since static electricity is discharged via a conductive grasping part to a ground even if the worker who is tinged not only with the operation effect of an invention of above-mentioned claim 5 and the same operation effect being done so by this composition but static electricity touches a functional printed circuit board, The electronic parts of a functional printed circuit board can be beforehand prevented from being destroyed by static electricity.

**0034**Hereafter, the embodiment which carried out the electronic equipment system of this invention to the surveillance camera system is explained in full detail with reference to the drawing shown in drawing 1 thru/or drawing 5.

**0035**The block diagram in which drawing 1 shows a surveillance camera system, the block diagram in which drawing 2 shows the perspective view of a common case, and drawing 3 shows the function in a common case, the front view of the printed circuit board which mounts drawing 4 into a common case, and drawing 5 are operation explanatory views.

**0036**As for 1, in drawing 1, a common case and 3 are two or more sets of monitors two or more sets of surveillance cameras, and 2, and the series connection of these surveillance cameras 1 and the monitor 3 of two or more **2 or** common cases is carried out, and. In the common case 2, the functional printed circuit board 4 of two or more sheets from which a function differs is mounted, and these functional printed circuit board 4 is controlled by the host computer 6 which is a control means operated by the final controlling element 5.

**0037**The throttle (not shown) for inserting two or more functional printed circuit boards 4 into the common case 2 estranges, and it is continued and installed in plural lines side by side, and the functional printed circuit board 4 except the power source substrate 7 can insert now in throttles with these arbitrary throttles freely.

**0038**As shown in drawing 3, in the common case 2, it is beforehand installed by the mother board 8, and to this mother board 8. CPU9 which is a judging means which judges ID

(discernment) function of each functional printed circuit board 4, The connector (not shown) provided for every image amplifying means 10 which amplifies the image sent from each surveillance camera 1, and throttle is connected, and it is communalized so that the functional printed circuit board 4 from which a kind differs can insert in each connector freely.

**0039**As the camera control function, a matrix switch function, a display function, etc. are mounted beforehand and also it is shown in drawing 4, the functional printed circuit board 4, ID (discernment) setting-out means 14 etc. which consist of a DIP switch for identifying the kind of the resistance 13 which realizes the function of the function displaying means 12 which consists of a functional display IC, and the function displaying means 12, and functional printed circuit board 4 are formed, and. In the one end side of the functional printed circuit board 4, the connection connector 15 linked to the connector in the common case 2 again to the other end side. When inserting and detaching the functional printed circuit board 4, the conductive grasping part 16 for preventing electronic parts, such as a semiconductor mounted in the functional printed circuit board 4, from being destroyed by static electricity is formed, respectively.

**0040**On the other hand, the image amplifying means 10 which amplifies the image from the surveillance camera 1, As shown in drawing 5, the image from the surveillance camera 1 which has the input part 10a into which the image from the surveillance camera 1 is inputted, and was inputted by this input part 10a, It is inputted into the functional printed circuit board 4 selected with the input switch 10b via the mother board 8. After being processed by the functional printed circuit board 4, it is again outputted to the outputting part 10d from the output switch 10c via the mother board 8, and the signal outputted from the outputting part 10d is sent to the monitor 3, and is displayed on the monitor 3.

**0041**If a part of functional printed circuit board 4 has failure etc., CPU9 will acquire failure information from each functional printed circuit board 4, Since the image inputted from the input part 10a is outputted to the outputting part 10d through the output switch 10c from the input switch 10b, without processing by the functional printed circuit board 4, the image which is not processed by the functional printed circuit board 4 is displayed on the monitor 3 as it is.

**0042**By namely, the failure information from the functional printed circuit board 4 mounted in the electronic equipment system in the common housing 2. Have provided the through function outputted without letting the functional printed circuit board 4 which broke down the signal inputted into the common housing 2 pass, and this through function, If systems breakdown is directed to the host computer 6, it will direct that this host computer 6 suspends the function of each functional printed circuit board 4, and it will output the signal inputted into the common housing 2, without letting the functional printed circuit board 4 pass.

**0043**Next, an operation of the surveillance camera system constituted as mentioned above is explained. In building a surveillance camera system, The functional printed circuit board 4 according to the scale of the system by the number of the surveillance camera 1, etc. is prepared beforehand, the identification signal of an ID number is set as these functional printed circuit board 4 by ID setting means 14, and the functional printed circuit board 4 is inserted in the arbitrary throttles of the common case 2.

**0044**The functional display according to a function is beforehand set as the function displaying means 12, and the setup information of these function displaying means 12 and ID setting means 14 is incorporated into the functional printed circuit board 4 by CPU9 installed in the common case 2 by mounting the functional printed circuit board 4 in the common case 2.

**0045**Next, in operating a surveillance camera system, programs, such as an operation method of the surveillance camera 1 and the method of presentation of the monitor 3, are inputted into the host computer 6 with more nearly automatic than the final controlling element 5 or hand control for every surveillance use, and a system is started.

**0046**The image picturized by this with the surveillance camera 1, It is sent to the functional printed circuit board 4 which has a predetermined function through the image amplifying means 10 in the common case 2, After image processing is carried out by the functional circuit of the functional printed circuit board 4, it is again outputted to the monitor 3 through the image amplifying means 10, and an image is automatically displayed on the monitor 3 in accordance with the order by which manual input was carried out by the program inputted beforehand from the final controlling element 5.

**0047**On the other hand, if the system was suspended each time when the control-system procedure of an electronic equipment system, etc. were changed, the fault which the surveillance for security will halt arises. If a stop of a system is directed from the final controlling element 5 to the host computer 6 in order to prevent this, The host computer 6 is



switched to the slew mode which links the input switch 10b of the image amplifying means 10, and the output switch 10c directly at the same time it takes out systems breakdown information to each functional printed circuit board 4 and stops a function.

**0048**The image from the surveillance camera 1 can change the control procedure of a system, etc. by this, without suspending surveillance, since it is directly outputted to the monitor 3, without passing the functional printed circuit board 4.

**0049**When substituting the functional printed circuit board 4 mounted in the common case 2 and changing a system, after stopping a system by the above-mentioned operation, extract the functional printed circuit board 4 exchanged from the inside of the common case 2, but. Since the grounded conductive grasping part 16 is formed in the end of the functional printed circuit board 4, If a worker grasps this conductive grasping part 16 and tries to extract the functional printed circuit board 4, Since the static electricity electrified on the worker's human body is discharged through the conductive grasping part 16 to a ground, electronic parts, such as a semiconductor on the functional printed circuit board 4, can be beforehand prevented from being destroyed by this with static electricity.

**0050**Although the above-mentioned embodiment explained the case where an electronic equipment system was used as a surveillance camera system, it is applicable to the electronic equipment system at large which is not limited to this and uses two or more functional printed circuit boards 4.

#### **0051**

**Effect of the Invention**Since it is not necessary to provide a housing for every functional printed circuit board according to the electronic equipment system concerning this invention as explained in full detail above, An electronic equipment system can build cheaply and, in the case of a small electronic equipment system with few functional printed circuit boards, the miniaturization of the electronic equipment whole system can be attained.

**0052**Since the function and identifying function of each functional printed circuit board which were mounted in the common housing are identified by the function displaying means provided in the functional printed circuit board, and a discernment setting-out means, a functional printed circuit board can be mounted in arbitrary order into a common housing.

**0053**When a functional printed circuit board breaks down according to the electronic equipment system concerning this invention, Since the signal which was switched to the through function by the failure information from a functional printed circuit board, and was inputted into the common case is outputted without letting a functional printed circuit board pass, an electronic equipment system does not stop it by failure of a functional printed circuit board.

**0054**According to the electronic equipment system concerning this invention, an electronic equipment system is stopped, Since the signal inputted into the common case can be outputted without letting a functional printed circuit board pass when changing the control-system procedure of an electronic equipment system, etc., a control-system procedure etc. can be changed without spoiling a monitoring function etc.

**0055**Even if it mounts two or more functional printed circuit boards in arbitrary order into a common case according to the housing structure of the electronic equipment system concerning this invention, in order that a judging means may carry out the discernment judging of the function and identifying function of each functional printed circuit board automatically, The mounting work of a functional printed circuit board can carry out easily in a short time, and there is also no fear of mistaking a mounting position.

**0056**According to the functional printed board structure of the electronic equipment system concerning this invention, for every functional printed circuit board, a function and an identifying function can set up now easily, a function displaying means can constitute cheaply, and a discernment setting-out means can constitute cheaply.

**0057**Since static electricity is discharged via a conductive grasping part to a ground even if the worker who is tinged with static electricity touches a functional printed circuit board, the electronic parts of a functional printed circuit board can be beforehand prevented from being destroyed by static electricity.

**Field of the Invention**This invention relates to the functional printed board structure mounted in the housing structure used for electronic equipment systems, such as a surveillance camera system, and this electronic equipment system, and this housing structure.



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**Description of the Prior Art** Drawing 6 shows the conventional surveillance camera system, and Two or more set **of surveillance cameras** a, The camera control means b, the matrix switch means c, and display means d, The series connection of two or more sets of the monitors e is carried out, and the camera control means b, the matrix switch means c, and display means d are controlled by the host computer f as follows.

**0003** Namely, if the monitor images picturized by two or more set **of surveillance cameras** a are inputted into the camera control means b and the camera number beforehand given to surveillance camera a from the final controlling element g connected to the host computer f is inputted, The host computer e switches the matrix switch means c so that the picture of surveillance camera a according to the inputted camera number may be sent to display means d.

**0004** The picture which surveillance camera a of the camera number inputted by this picturized is sent to display means d, it is constituted so that it may be displayed on the monitor e connected to display means d, and the picture which two or more surveillance camera a picturized simultaneously can also be displayed now on the monitor e.

**0005** In the above conventional surveillance camera systems. The camera control means b, the matrix switch means c, display means d, etc., It is constituted by two or more printed circuit board h, respectively, and as shown in drawing 7, it is mounted in the housing i provided in every each camera control means b, matrix switch means c, and display means d.

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**Effect of the Invention** Since it is not necessary to provide a housing for every functional printed circuit board according to the electronic equipment system concerning this invention as explained in full detail above, An electronic equipment system can build cheaply and, in the case of a small electronic equipment system with few functional printed circuit boards, the miniaturization of the electronic equipment whole system can be attained.

**0052** Since the function and identifying function of each functional printed circuit board which were mounted in the common housing are identified by the function displaying means provided in the functional printed circuit board, and a discernment setting-out means, a functional printed circuit board can be mounted in arbitrary order into a common housing.

**0053** When a functional printed circuit board breaks down according to the electronic equipment system concerning this invention, Since the signal which was switched to the through function by the failure information from a functional printed circuit board, and was inputted into the common case is outputted without letting a functional printed circuit board pass, an electronic equipment system does not stop it by failure of a functional printed circuit board.

**0054** According to the electronic equipment system concerning this invention, an electronic equipment system is stopped, Since the signal inputted into the common case can be outputted without letting a functional printed circuit board pass when changing the control-system procedure of an electronic equipment system, etc., a control-system procedure etc. can be changed without spoiling a monitoring function etc.

**0055** Even if it mounts two or more functional printed circuit boards in arbitrary order into a common case according to the housing structure of the electronic equipment system concerning this invention, in order that a judging means may carry out the discernment judging of the function and identifying function of each functional printed circuit board automatically, The mounting work of a functional printed circuit board can carry out easily in a short time, and there is also no fear of mistaking a mounting position.

**0056** According to the functional printed board structure of the electronic equipment system concerning this invention, for every functional printed circuit board, a function and an identifying function can set up now easily, a function displaying means can constitute cheaply, and a discernment setting-out means can constitute cheaply.

**0057** Since static electricity is discharged via a conductive grasping part to a ground even if the worker who is tinged with static electricity touches a functional printed circuit board, the electronic parts of a functional printed circuit board can be beforehand prevented from being destroyed by static electricity.

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**Problem(s) to be Solved by the Invention**In the above-mentioned conventional electronic equipment system, it had become the structure which equipped with the housing h every camera control means b to constitute this electronic equipment system, matrix switch means c, and display means d.

**0007**However, since there is much number of sheets of printed circuit board h which constitutes each camera control means b, the matrix switch means c, and display means d when an electronic equipment system is large-sized, Although there is a merit which mounts printed circuit board h in every each camera control means b, matrix switch means c, and display means d, Since the number of sheets of printed circuit board h which constitutes each camera control means b, the matrix switch means c, and display means d also decreases when an electronic equipment system is small, In some which form the housing i like the above-mentioned conventional system in every each camera control means b, matrix switch means c, and display means d, there was a problem that the price of electronic equipment systems became high and became uneconomical.

**0008**This invention is made paying attention to the above-mentioned problem, and there is a place made into the 1st purpose in providing the electronic equipment system which it becomes unnecessary to provide a housing for every functional printed circuit board, and can be built cheaply.

**0009**The mounting work of a functional printed circuit board can carry out easily in a short time, and there is a place made into the 2nd purpose of this invention in providing the housing structure of an electronic equipment system without a fear of mistaking a mounting position.

**0010**The place made into the 3rd purpose of this invention has a function and an identifying function in providing the functional printed board structure of the electronic equipment system which can be easily set up now for every functional printed circuit board.

**Means for Solving the Problem**In order to attain the 1st above-mentioned purpose, an electronic equipment system concerning this invention, It has a discernment setting-out means to set up an identifying function for two or more functional printed circuit boards to distinguish from a function displaying means and other functional printed circuit boards which display each original function, A function of said functional printed circuit board which mounted a functional printed circuit board of these plurality in a common case in arbitrary order, and was mounted in said common case by a control means is controlled.

**0012**In order to attain the 2nd above-mentioned purpose, housing structure of an electronic equipment system of this invention is characterized by comprising the following:  
A common housing which can be mounted in order with two or more arbitrary functional printed circuit boards.

A judging means which judges a function and an identifying function of a functional printed circuit board by a function displaying means and a discernment setting-out means of a functional printed circuit board which were mounted in a common housing.

**0013**In order to attain the 3rd above-mentioned purpose, functional printed board structure of an electronic equipment system of this invention is characterized by comprising the following:  
A functional printed circuit board which has a different function.

A discernment setting-out means to set up an identifying function of a function displaying means which is provided in these functional printed circuit board, respectively, and displays a function of a functional printed circuit board, and a functional printed circuit board.

**0014**Therefore, since it is not necessary to provide a housing for every functional printed circuit board according to the electronic equipment system concerning this invention, an electronic equipment system can build cheaply, and in the case of a small electronic equipment system with few functional printed circuit boards, a miniaturization of the electronic equipment whole system can be attained.

**0015**Even if it mounts two or more functional printed circuit boards in arbitrary order into a common case according to housing structure of an electronic equipment system concerning this invention, in order that a judging means may carry out the discernment judging of a function and an identifying function of each functional printed circuit board automatically, Mounting work of a functional printed circuit board can carry out easily in a short time, and there is also no fear of mistaking a mounting position.

**0016**According to functional printed board structure of an electronic equipment system concerning this invention, a function and an identifying function can set up now easily for every functional printed circuit board.

**0017**

**Embodiment of the Invention**The electronic equipment system concerning the invention of claim 1 two or more functional printed circuit boards, It has a discernment setting-out means to set up the identifying function for distinguishing from the function displaying means and other functional printed circuit boards which display each original function, The function of said functional printed circuit board which mounted the functional printed circuit board of these plurality in the common case in arbitrary order, and was mounted in said common case by the control means is controlled.

**0018**By this composition, since it is not necessary to provide a housing for every functional printed circuit board, an electronic equipment system can build cheaply, and in the case of a small electronic equipment system with few functional printed circuit boards, the miniaturization of the electronic equipment whole system can be attained.

**0019**Since the function and identifying function of each functional printed circuit board which were mounted in the common housing are identified by the function displaying means provided in the functional printed circuit board, and a discernment setting-out means, a functional printed circuit board can be mounted in arbitrary order into a common housing.

**0020**The electronic equipment system concerning the invention of claim 2 provides the through function outputted without letting the functional printed circuit board which broke down the signal inputted into the common housing by the failure information from the functional printed circuit board mounted in the common housing pass in the electronic equipment system according to claim 1.

**0021 that the operation effect of an invention of above-mentioned claim 1 and the same operation effect can be done so by this composition, and** When a functional printed circuit board breaks down, since the signal which was switched to the through function by the failure information from a functional printed circuit board, and was inputted into the common case is outputted without letting a functional printed circuit board pass, an electronic equipment system does not stop it by failure of a functional printed circuit board.

**0022**The electronic equipment system concerning the invention of claim 3, In the electronic equipment system according to claim 1, if systems breakdown is directed to a control means, it will direct that this control means suspends the function of each functional printed circuit board, and it will provide the through function which outputs the signal inputted into the common housing without letting a functional printed circuit board pass.

**0023 that the operation effect of an invention of above-mentioned claim 1 and the same operation effect can be done so by this composition, and** Since the signal inputted into the common case can be outputted without letting a functional printed circuit board pass when stopping an electronic equipment system and changing the control-system procedure of an electronic equipment system, etc., a control-system procedure etc. can be changed without spoiling a monitoring function etc.

**0024**The housing structure of the electronic equipment system concerning the invention of claim 4, It has \*\* which judges the function and identifying function of a functional printed circuit board by the function displaying means and discernment setting-out means of a functional printed circuit board which were mounted in the common housing which can be mounted in order with two or more arbitrary functional printed circuit boards, and the common housing.

**0025**By this composition, even if it mounts two or more functional printed circuit boards in arbitrary order into a common case, since a judging means carries out the discernment judging of the function and identifying function of each functional printed circuit board automatically, the mounting work of a functional printed circuit board can carry out easily in a short time, and there is also no fear of mistaking a mounting position.

**0026**The functional printed board structure of the electronic equipment system concerning the invention of claim 5, It has a discernment setting-out means to set up the identifying function of the function displaying means which is provided in the functional printed circuit board which has a different function, and these functional printed circuit board, respectively, and displays the function of a functional printed circuit board, and a functional printed circuit board.

**0027**By this composition, a function and an identifying function can set up now easily for every functional printed circuit board.

**0028**In the functional printed board structure of the electronic equipment system concerning



the invention of claim 5, the functional printed board structure of the electronic equipment system concerning the invention of claim 6 constitutes a function displaying means from a functional display IC and several resistance which differs in a value.

**0029**The operation effect of an invention of above-mentioned claim 5 and the same operation effect not only being done so by this composition but a function displaying means can constitute cheaply.

**0030**The functional printed board structure of the electronic equipment system concerning the invention of claim 7 constitutes a discernment setting-out means with a DIP switch in the functional printed board structure of the electronic equipment system concerning the invention of claim 5.

**0031**The operation effect of an invention of above-mentioned claim 5 and the same operation effect not only being done so by this composition but a discernment setting-out means can constitute cheaply.

**0032**The functional printed board structure of the electronic equipment system concerning the invention of claim 8 provides a conductive grasping part in the end of a functional printed circuit board in the functional printed board structure of the electronic equipment system concerning the invention of claim 5.

**0033**Since static electricity is discharged via a conductive grasping part to a ground even if the worker who is tinged not only with the operation effect of an invention of above-mentioned claim 5 and the same operation effect being done so by this composition but static electricity touches a functional printed circuit board, The electronic parts of a functional printed circuit board can be beforehand prevented from being destroyed by static electricity.

**0034**Hereafter, the embodiment which carried out the electronic equipment system of this invention to the surveillance camera system is explained in full detail with reference to the drawing shown in drawing 1 thru/or drawing 5.

**0035**The block diagram in which drawing 1 shows a surveillance camera system, the block diagram in which drawing 2 shows the perspective view of a common case, and drawing 3 shows the function in a common case, the front view of the printed circuit board which mounts drawing 4 into a common case, and drawing 5 are operation explanatory views.

**0036**As for 1, in drawing 1, a common case and 3 are two or more sets of monitors two or more sets of surveillance cameras, and 2, and the series connection of these surveillance cameras 1 and the monitor 3 of two or more **2 or** common cases is carried out, and. In the common case 2, the functional printed circuit board 4 of two or more sheets from which a function differs is mounted, and these functional printed circuit board 4 is controlled by the host computer 6 which is a control means operated by the final controlling element 5.

**0037**The throttle (not shown) for inserting two or more functional printed circuit boards 4 into the common case 2 estranges, and it is continued and installed in plural lines side by side, and the functional printed circuit board 4 except the power source substrate 7 can insert now in throttles with these arbitrary throttles freely.

**0038**As shown in drawing 3, in the common case 2, it is beforehand installed by the mother board 8, and to this mother board 8. CPU9 which is a judging means which judges ID (discernment) function of each functional printed circuit board 4, The connector (not shown) provided for every image amplifying means 10 which amplifies the image sent from each surveillance camera 1, and throttle is connected, and it is communalized so that the functional printed circuit board 4 from which a kind differs can insert in each connector freely.

**0039**As the camera control function, a matrix switch function, a display function, etc. are mounted beforehand and also it is shown in drawing 4, the functional printed circuit board 4, ID (discernment) setting-out means 14 etc. which consist of a DIP switch for identifying the kind of the resistance 13 which realizes the function of the function displaying means 12 which consists of a functional display IC, and the function displaying means 12, and functional printed circuit board 4 are formed, and. In the one end side of the functional printed circuit board 4, the connection connector 15 linked to the connector in the common case 2 again to the other end side. When inserting and detaching the functional printed circuit board 4, the conductive grasping part 16 for preventing electronic parts, such as a semiconductor mounted in the functional printed circuit board 4, from being destroyed by static electricity is formed, respectively.

**0040**On the other hand, the image amplifying means 10 which amplifies the image from the surveillance camera 1, As shown in drawing 5, the image from the surveillance camera 1 which has the input part 10a into which the image from the surveillance camera 1 is inputted, and was inputted by this input part 10a, It is inputted into the functional printed circuit board 4



selected with the input switch 10b via the mother board 8. After being processed by the functional printed circuit board 4, it is again outputted to the outputting part 10d from the output switch 10c via the mother board 8, and the signal outputted from the outputting part 10d is sent to the monitor 3, and is displayed on the monitor 3.

**0041**If a part of functional printed circuit board 4 has failure etc., CPU9 will acquire failure information from each functional printed circuit board 4. Since the image inputted from the input part 10a is outputted to the outputting part 10d through the output switch 10c from the input switch 10b, without processing by the functional printed circuit board 4, the image which is not processed by the functional printed circuit board 4 is displayed on the monitor 3 as it is.

**0042**By namely, the failure information from the functional printed circuit board 4 mounted in the electronic equipment system in the common housing 2. Have provided the through function outputted without letting the functional printed circuit board 4 which broke down the signal inputted into the common housing 2 pass, and this through function, If systems breakdown is directed to the host computer 6, it will direct that this host computer 6 suspends the function of each functional printed circuit board 4, and it will output the signal inputted into the common housing 2, without letting the functional printed circuit board 4 pass.

**0043**Next, an operation of the surveillance camera system constituted as mentioned above is explained. In building a surveillance camera system, The functional printed circuit board 4 according to the scale of the system by the number of the surveillance camera 1, etc. is prepared beforehand, the identification signal of an ID number is set as these functional printed circuit board 4 by ID setting means 14, and the functional printed circuit board 4 is inserted in the arbitrary throttles of the common case 2.

**0044**The functional display according to a function is beforehand set as the function displaying means 12, and the setup information of these function displaying means 12 and ID setting means 14 is incorporated into the functional printed circuit board 4 by CPU9 installed in the common case 2 by mounting the functional printed circuit board 4 in the common case 2.

**0045**Next, in operating a surveillance camera system, programs, such as an operation method of the surveillance camera 1 and the method of presentation of the monitor 3, are inputted into the host computer 6 with more nearly automatic than the final controlling element 5 or hand control for every surveillance use, and a system is started.

**0046**The image picturized by this with the surveillance camera 1, It is sent to the functional printed circuit board 4 which has a predetermined function through the image amplifying means 10 in the common case 2, After image processing is carried out by the functional circuit of the functional printed circuit board 4, it is again outputted to the monitor 3 through the image amplifying means 10, and an image is automatically displayed on the monitor 3 in accordance with the order by which manual input was carried out by the program inputted beforehand from the final controlling element 5.

**0047**On the other hand, if the system was suspended each time when the control-system procedure of an electronic equipment system, etc. were changed, the fault which the surveillance for security will halt arises. If a stop of a system is directed from the final controlling element 5 to the host computer 6 in order to prevent this, The host computer 6 is switched to the slew mode which links the input switch 10b of the image amplifying means 10, and the output switch 10c directly at the same time it takes out systems breakdown information to each functional printed circuit board 4 and stops a function.

**0048**The image from the surveillance camera 1 can change the control procedure of a system, etc. by this, without suspending surveillance, since it is directly outputted to the monitor 3, without passing the functional printed circuit board 4.

**0049**When substituting the functional printed circuit board 4 mounted in the common case 2 and changing a system, after stopping a system by the above-mentioned operation, extract the functional printed circuit board 4 exchanged from the inside of the common case 2, but. Since the grounded conductive grasping part 16 is formed in the end of the functional printed circuit board 4, If a worker grasps this conductive grasping part 16 and tries to extract the functional printed circuit board 4, Since the static electricity electrified on the worker's human body is discharged through the conductive grasping part 16 to a ground, electronic parts, such as a semiconductor on the functional printed circuit board 4, can be beforehand prevented from being destroyed by this with static electricity.

**0050**Although the above-mentioned embodiment explained the case where an electronic equipment system was used as a surveillance camera system, it is applicable to the electronic equipment system at large which is not limited to this and uses two or more functional printed circuit boards 4.

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**Brief Description of the Drawings**

**Drawing 1**The block diagram showing the electronic equipment system concerning this invention

**Drawing 2**The perspective view showing the casing structure of the electronic equipment system concerning this invention

**Drawing 3**The block diagram showing the casing structure of the electronic equipment system concerning this invention

**Drawing 4**The front view showing the functional printed circuit board of the electronic equipment system concerning this invention

**Drawing 5**The explanatory view of the image amplifying means provided in the casing structure of the electronic equipment system concerning this invention

**Drawing 6**The block diagram showing the conventional electronic equipment system

**Drawing 7**The explanatory view showing the casing structure of the conventional electronic equipment system

**Description of Notations**

- 1 Surveillance camera
  - 2 Common case
  - 3 Monitor
  - 4 Functional printed circuit board
  - 5 Final controlling element
  - 6 Host computer (control means)
  - 7 Power source substrate
  - 8 Mother board
  - 9 CPU (judging means)
  - 10 Image amplifying means
  - 10a Input part
  - 10b Input switch
  - 10c Output switch
  - 10 d Outputting part
  - 12 Function displaying means
  - 13 Resistance
  - 14 ID setting means (discernment setting-out means)
  - 15 Connecting switch
  - 16 Conductive grasping part
- 

**Drawing 1**

For drawings please refer to the original document.

**Drawing 2**

For drawings please refer to the original document.

**Drawing 3**

For drawings please refer to the original document.

**Drawing 4**

For drawings please refer to the original document.

**Drawing 5**

For drawings please refer to the original document.

**Drawing 6**

For drawings please refer to the original document.

**Drawing 7**

For drawings please refer to the original document.

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